

A NEW CAVE *PLATYMANTIS* (AMPHIBIA: RANIDAE) FROM THE PHILIPPINE ISLANDS

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Abstract.—A new cave-dwelling frog, *Platymantis spelaeus* (Ranidae), is described from southern Negros Island in the Philippines. This is the second cave-dweller and the twelfth species of the genus known from this archipelago.

Recognized species of the genus *Platymantis* include two from the Fiji Islands, nine from the Solomons, nine from the Bismarcks, four or five from New Guinea and small associated islands, one from the Palaus, and eleven from the Philippines. With the exception of one species (as presently defined) which ranges from New Guinea to the Solomons, all are endemic to the regions indicated.

In the western Philippines the genus is absent from Palawan and associated small islands. In the rest of Philippines, three species (*P. corrugatus*, *P. dorsalis* and *P. guentheri*) are widespread, being recorded from Mindanao in the south through Luzon in the north. In addition, *P. ingeri* occurs in Mindanao and other islands in the southern part, *P. hazelae* has been recorded from Negros and Luzon Islands, and the very closely related *P. polillensis* is known from Polillo Island. The remaining five species are known from limited localities on single islands. *Platymantis cornutus* and *P. subterrestris* are recorded from Luzon Island, *P. lawtoni* and *P. levigatus* from Tablas Island to the south of Luzon and east of Mindoro, and *P. insulatus* from the very small island, Gigante South, off the northeast coast of Panay.

Typically these frogs inhabit the rain forest, being either arboreal or in habitats of the duff or under rocks and logs on the forest floor. Only one species, *P. insulatus* (Brown and Alcala, 1970), has previously been recorded as cave-dwelling. Now a second such species is described in this paper. The type series is from two limestone caves in a forested area in southern Negros Island.

Measurements of specimens were made using a Helios dial caliper. Head length is measured from the tip of the snout to the posterior edge of the tympanum and head breadth at the widest point near the angle of the jaws. The diameter of the eye is from the anterior to the posterior edge of the socket. Finger and toe lengths are to the proximal edge of the proximal subarticular tubercle. Other measurements are probably not subject to much variation in method.

Platymantis spelaeus, new species

Fig. 1

Holotype.—California Academy of Sciences number 153469, mature female, collected in a limestone cave, Tiyabanan Barrio, Basay, southern Negros Oriental, Negros Island, Philippines, by Angel Alcala and C. A. Ross, 18 March 1981.

Paratypes.—California Academy of Sciences 153470-83; United States National Museum 221838-39; Australian Museum, Sydney R98394; Field Museum

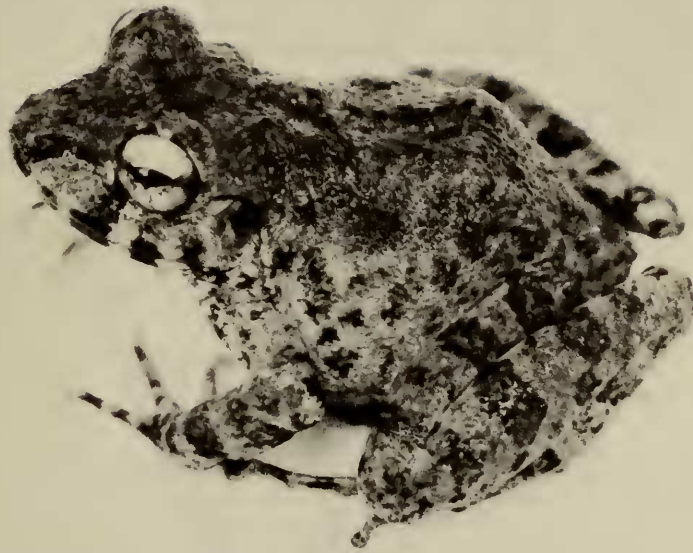


Fig. 1. *Platymantis spelaeus*, showing the lack of ridges on the dorsum, the large tympanum, and characteristic features of the color pattern.

Natural History 213331; British Museum (Natural History) 1981.9; Museum of Comparative Zoology, Harvard A100300; Silliman University, Philippines 2288-92; American Museum Natural History 109454, all from two caves in southern Negros Island.

Diagnosis.—This *Platymantis* is distinguished from other Philippine species by the following combination of characters: (1) Large size (snout-vent length 41.5–60.5 mm for 17 adults); (2) The only slightly dilated finger disks, about the same diameter as those of the toes; (3) Tympanum relatively large, its diameter about 62–82% of that of the eye; (4) Skin of the dorsum rough (shagreened), neither smooth nor with prominent tubercles or elongate ridges.

Description.—A large *Platymantis*, snout-vent length (SVL) 41.5–46.9 mm for 5 males and 52.8–60.5 mm for 11 females (Table 1); head breadth 107–111% of head length; snout broadly rounded, its length 40–44% of head breadth and 41–49% of head length; upper jaw protruding; canthus rostralis rounded; lores moderately oblique, concave; diameter of eye 27–37% of head breadth and 63–88% of snout length; tympanum large, its diameter 63–82% of eye diameter, 105–147% of interorbital distance, and about twice the diameter of the third finger disk; prominent fold dorsal and posterior to tympanum; dorsum shagreened (Fig. 1) but lacking ridges; venter smooth; fingers slender, without webs; tips of fingers with rounded disks having a circummarginal groove but lacking a transverse ventral groove (Fig. 2); diameter of disk of third finger 20–25% of length of third finger (measured to base of second subarticular tubercle); disk of second finger

Table 1.—Snout-vent lengths for Philippine species of *Platymantis* (number in sample in parentheses).

Species	Snout-vent length (mm)		
	Males	Sex undetermined	Females
<i>P. cornutus</i>		30.7 (1)	
<i>P. corrugatus</i>	28.5–35.0 (15)		33.6–50.2 (15)
<i>P. dorsalis</i>	21.5–30.5 (25)		25.5–42.4 (30)
<i>P. guentheri</i>	27.4–35.5 (24)		38.3–49.1 (20)
<i>P. hazelae</i>	20.6–27.6 (15)		20.7–31.7 (15)
<i>P. ingeri</i>	23.0–30.5 (16)		26.9–34.5 (23)
<i>P. insulatus</i>	37.8–41.7 (3)		40.2–45.5 (3)
<i>P. lawtoni</i>	—		39.0 (1)
<i>P. levigatus</i>	30.3 (1)		38.5 (1)
<i>P. polillensis</i>	20.2–22.6 (2)		—
<i>P. spelaeus</i>	41.5–46.9 (6)		52.8–60.5 (11)
<i>P. subterrestris</i>	24.0–26.3 (2)	27.2 (1)	

nearly as large as that of third finger (Table 2); first finger slightly longer than second when adpressed; fingers with prominent rounded subarticular tubercles; a prominent palmer tubercle at base of each finger; three large metacarpal tubercles; hind limbs relatively long, length of tibia 52–63% of snout-vent length and 127–148% of head breadth; toes with small web at base; tips dilated into rounded disks with circummarginal grooves; diameter of disk of third toe 87–1.07% of diameter of disk of third finger; subarticular tubercles prominent, round-pointed;

Table 2.—Proportions in samples of some of the larger Philippine species of *Platymantis*.

	<i>P. guentheri</i> (n = 20)	<i>P. insulatus</i> (n = 5)	<i>P. levigatus</i> (n = 2)	<i>P. spelaeus</i> (n = 19)
Eye diameter	0.33–0.39	0.37–0.41	0.29–0.30	0.27–0.37
Head breadth				
Eye diameter	1.04–1.09	0.99–1.06	0.97–0.98	0.63–0.88
Snout length				
Snout length	0.30–0.35	0.35–0.39	0.29–0.31	0.40–0.49
Head breadth				
Tympanum diameter	0.37–0.48	0.48–0.61	0.33–0.40	0.63–0.82
Eye diameter				
Tympanum diameter	0.63–0.87	1.22–1.71	1.40–1.50	1.89–2.60
Breadth of 3rd finger disk				
Interorbital breadth	0.45–0.67	0.44–0.49	0.60–0.61	0.47–0.67
Eye diameter				
Breadth of 3rd finger disk	0.36–0.51	0.27–0.31	0.17–0.20	0.20–0.25
Length of 3rd finger				
Breadth of 2nd finger disk	0.73–0.90	0.63–0.74	0.91–1.00	0.76–0.95
Breadth of 3rd finger disk				
Breadth of 3rd toe disk	0.47–0.56	0.62–0.74	0.85–0.90	0.87–1.07
Breadth of 3rd finger disk				

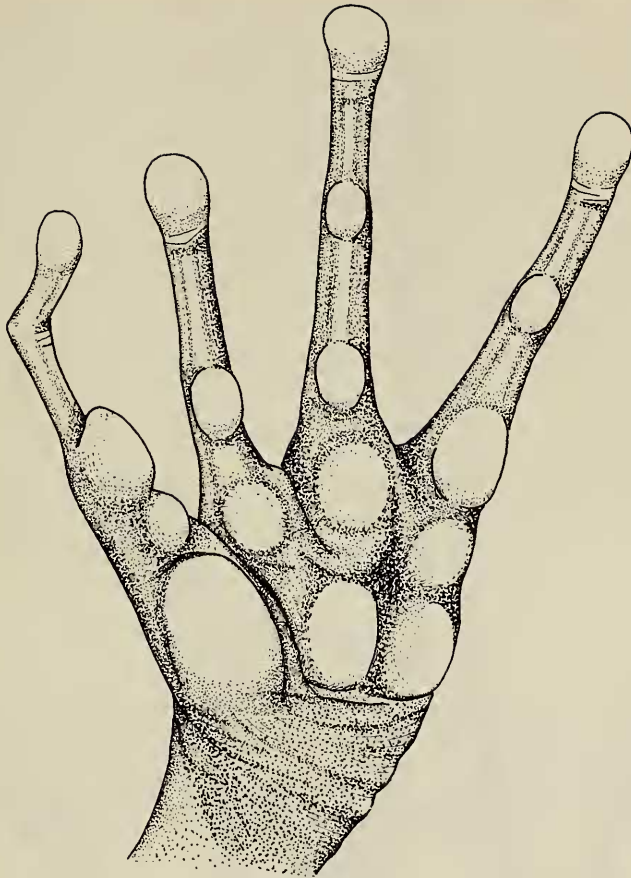


Fig. 2. *P. spelaeus* (SU 2288): palmar view of hand.

an elongate outer metatarsal tubercle and a rounded inner one; solar tubercles lacking (Fig. 3).

Measurements (in mm) of holotype.—Snout–vent length 60.5; head length 22.5; head breadth 24.4; snout–length 10.0; eye diameter 8.8; tympanum diameter 5.5; interorbital distance 4.4; 3rd finger length 10.8; diameter of 3rd finger disk 2.7; diameter of 3rd toe disk 2.5; hind limb length $95\pm$; tibia length 31.5.

Color.—In preservative the dorsum and the head are mottled grayish-olive and black with a short, broad, blackish “W” in the forelimb region. The lateral surfaces are more grayish with the darker mottling reduced. The lips are dark barred. The dark transverse bands on the limbs are about as wide as or wider than the light bands (Fig. 1). The venter is creamy white with some faint gray mottling.

In life the dorsum is olive-green to brown with darker mottling. The upper surfaces of the thighs are dark barred and the inner surface either orange or lavender. The venter is cream colored with or without brown flecks.

Comparisons.—This is the largest species of the genus known from the Philippines (Table 1). Eight of the previously described species are small, arboreal forms with the SVL in mature males under 36 mm and with females rarely attaining a SVL greater than 40 mm (*P. dorsalis* does). Only one mature female is known for both *P. lawtoni* and *P. levigatus*, in which the SVL is 39 and 38.5, respectively, and it is possible that a SVL of 40 mm may be exceeded in those species. Only males of *P. insulatus* overlap *P. spelaeus* in SVL and only females

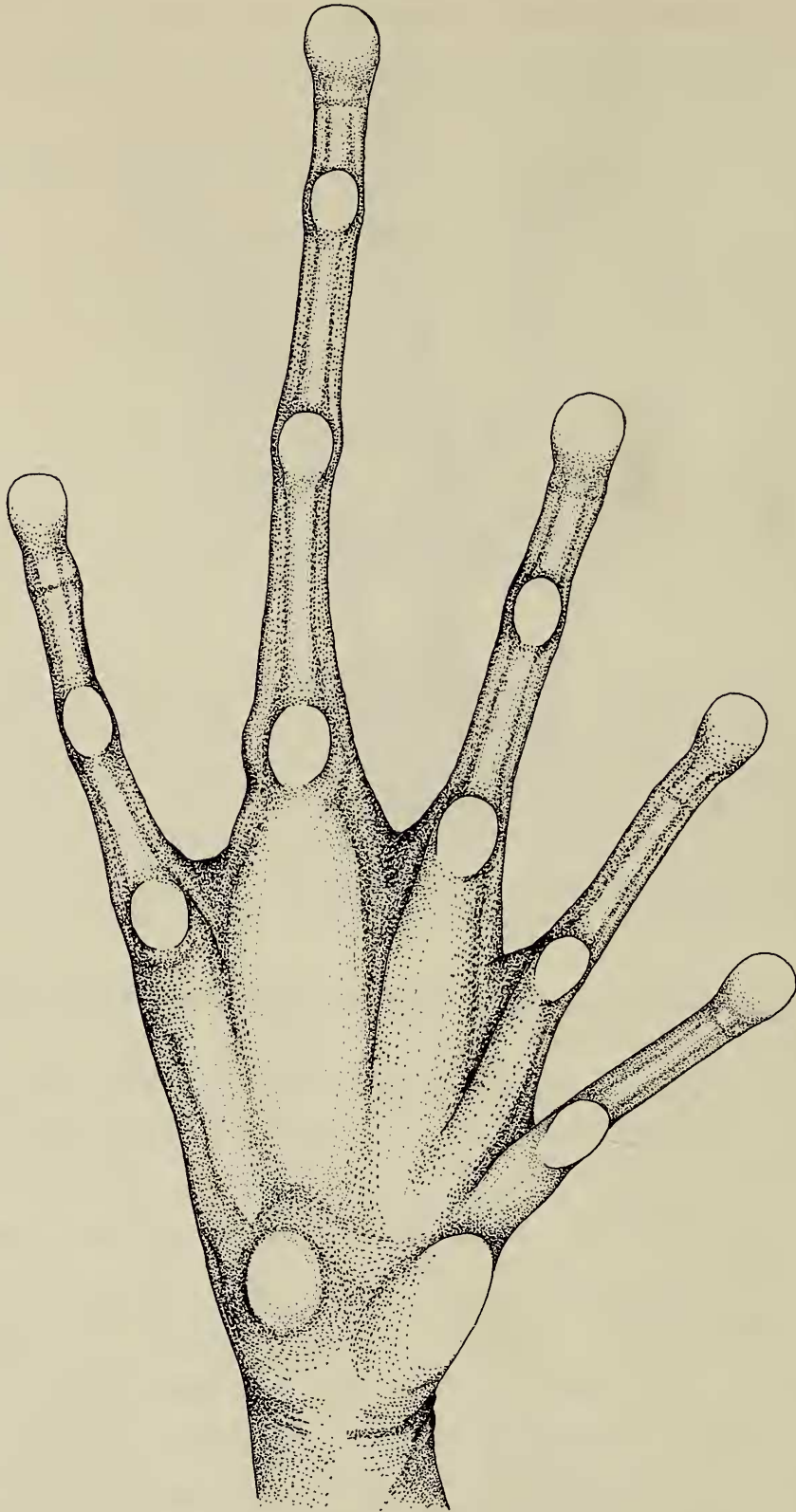


Fig. 3. *P. spelaeus* (SU 2288): plantar view of foot.

of *P. corrugatus*, *P. dorsalis*, *P. guentheri* and *P. insulatus* approach females of *P. spelaeus* in size although they do not overlap (Table 1).

Most Philippine species also have broadly dilated digital disks, especially on the fore limbs (Inger 1954; Brown and Alcala 1963, 1970, 1974). Only in *P. cor-*

rugatus, *P. dorsalis* and *P. levigatus* are the finger tips only slightly dilated as is characteristic of *P. spelaeus*.

The shagreened skin of the dorsum (not smooth or with prominent tubercles or ridges) is also characteristic of *P. insulatus* and *P. lawtoni*.

Platymantis spelaeus, *insulatus* and *dorsalis* are the most apt to be confused in terms of general appearance. The somewhat smaller *P. dorsalis* has prominent, short ridges on the dorsum, and the general color is more brown to reddish. *Platymantis insulatus* is closer to *P. spelaeus* in size, texture of the skin on the dorsum, and general color pattern, but the tips of the fingers are much more broadly dilated and the tympanum is smaller (Table 2). The species *P. spelaeus* and *P. insulatus* are probably closely related.

Ecological notes.—All specimens were collected near the entrances of two moist limestone caves, in crevices or pockets in the walls or on the floor. Sixty large (2.5–3.0 mm diameter) unpigmented eggs were found in the ovaries of a large gravid female (55 mm SVL).

Acknowledgments

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Literature Cited

- Brown, Walter C., and Angel C. Alcala. 1963. A new frog of the genus *Cornufer* (Ranidae) with notes on other amphibians known from Bohol Island, Philippines.—*Copeia* 1963:672–675.
- , and ———. 1970. A new species of the genus *Platymantis* (Ranidae) with a list of amphibians known from South Gigante Island, Philippines.—*Occasional Papers of the California Academy of Sciences* 84:1–8.
- , and ———. 1974. New frogs of the genus *Platymantis* (Ranidae) from the Philippines.—*Occasional Papers of the California Academy of Sciences* 113:1–12.
- Inger, Robert F. 1954. Systematics and zoogeography of the Philippine Amphibia.—*Fieldiana: Zoology* 33:183–531.

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